DISTRIBUTION AND ABUNDANCE OF MUSKOXEN

ON DEVON ISLAND, NWT

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DISTRIBUTION AND ABUNDANCE OF MUSKOXEN ON DEVON ISLAND, NWT AUGUST 1990

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ABSTRACT

An aerial survey of lowland areas along the coast of Devon Island conducted in August 1990 located 366 muskoxen (*Ovibos moschatus*). Adjusting for areas missed and areas of poor survey coverage the minimum number of muskox on Devon Island is thought to be 400. This estimate is similar to estimates made in 1971 and 1980. Detailed surveys of the northeastern portion of the island conducted by Pattie (1990) between 1978 and 1987 indicate that during the mid 1980's the population was much lower. Therefore, the population has been increasing in recent years. Muskox calf production and survival was good with 12.8% calves and 8.2% yearlings in the population. No changes to the muskox quotas are recommended for the study area.

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INTRODUCTION

The coastal lowlands of Devon Island have been occupied by muskox at least since the first europeans entered the area. Barr (1991) indicated that the first recorded sightings of muskoxen on Devon Island by europeans was in 1853 when three were observed on the northwest portion of the island. Tener (1958) estimated that there were a minimum of 200 muskox on Devon Island in the mid 1950's. Based on sightings during 1966-67 Freeman (1971) estimated there to be 450 muskox on the north coast of Devon Island including Grinnell Peninsula. Based on surveys flown by Decker (unpubl) Urquhart (1982) estimated that the population on the entire island was approximately 400 animals in 1980.

Most of the previous surveys have focused on the five adjacent lowlands on the northeast coast between Sverdrup Inlet in the west and Belcher Point in the east. Freeman (1971) estimated the muskox population for the entire north coast to be 230-300. Hubert (1977) counted between 116 and 278 muskoxen on the five adjacent lowlands between 1970 and 1973. Pattie (1990) found between 71 and 188 muskoxen in the same area between 1984 and 1987.

During the only aerial survey of southern and western Devon Island Decker (unpubl) located 32 muskox in the Croker Bay/Dundas Harbour area, 14 muskox in the Philpots Island area and 46 muskox inland from Baring Bay.

METHODS

The survey was flown using a Bell 206B helicopter provided by Polar Continental Shelf (PCSP) in Resolute and was based out of the Arctic Institute of North America camp at Truelove Inlet and the PCSP facility in Resolute. The crew consisted of the pilot, an observer/navigator in the front left seat and an observer in the right rear seat. Lowland areas known to have supported muskox in the past were delineated on 1:250,000 scale topographic maps. These areas were searched by flying back and forth across them at approximately 2-3 km intervals. Animal locations were recorded directly onto the topographic maps. Animals were aged and sexed based on size and horn configuration (Olesen and Thing 1989). Numbers, age and sex of animals in each group were recorded on data sheets.

RESULTS

The survey was completed in three consecutive days from 03 to 07 August 1990. The weather during this period was excellent with the exception of the afternoon of 05 August when low fog and strong winds were encountered east of Dundas Harbour.

Areas searched include the five contiguous lowlands along the northeast coast, the area around Croker Bay and Dundas Harbour, the south coast of the island east of Croker Bay to Maxwell Bay, the

lowland west of Cape Sherard and the lowland and valley east of Baring Bay (Figure 1). The area north of Cape Sherard, including Philpots Island, was not surveyed due to poor weather. These areas include the portions of Devon Island identified by Decker (unpubl) as marginal to good muskox range.

A total of 366 muskox were observed in the areas searched. Fourteen muskox were observed in the Philpots Island area in 1980. As muskox numbers on the remainder of the island are similar to the 1980 figures it is unlikely that there are any more than 20 muskox in the area missed. Additional animals may have also been missed in the Sverdrup Inlet as coverage was incomplete. However it is likely less than 15 were missed. The total population for the island is therefore a minimum of 400 adult, juvenile and calf muskoxen.

The sex ratio of muskoxen varied between areas ranging between 25 bulls:100 females 2+ on Truelove Lowland and 56.3 bulls:100 females 2+ near Croker Bay/Dundas Harbour (Table 1). The overall sex ratio was 39.5 bulls:100 females 2+.

Calves:100 females 2+ ratios ranged from 13 calves:100 females 2+ near Croker Bay/Dundas Harbour and near Baring Bay to 75 calves:100 females 2+ on Sverdrup Lowland. The ratio for the entire study area was 23.5 calves:100 females 2+ (Table 1).

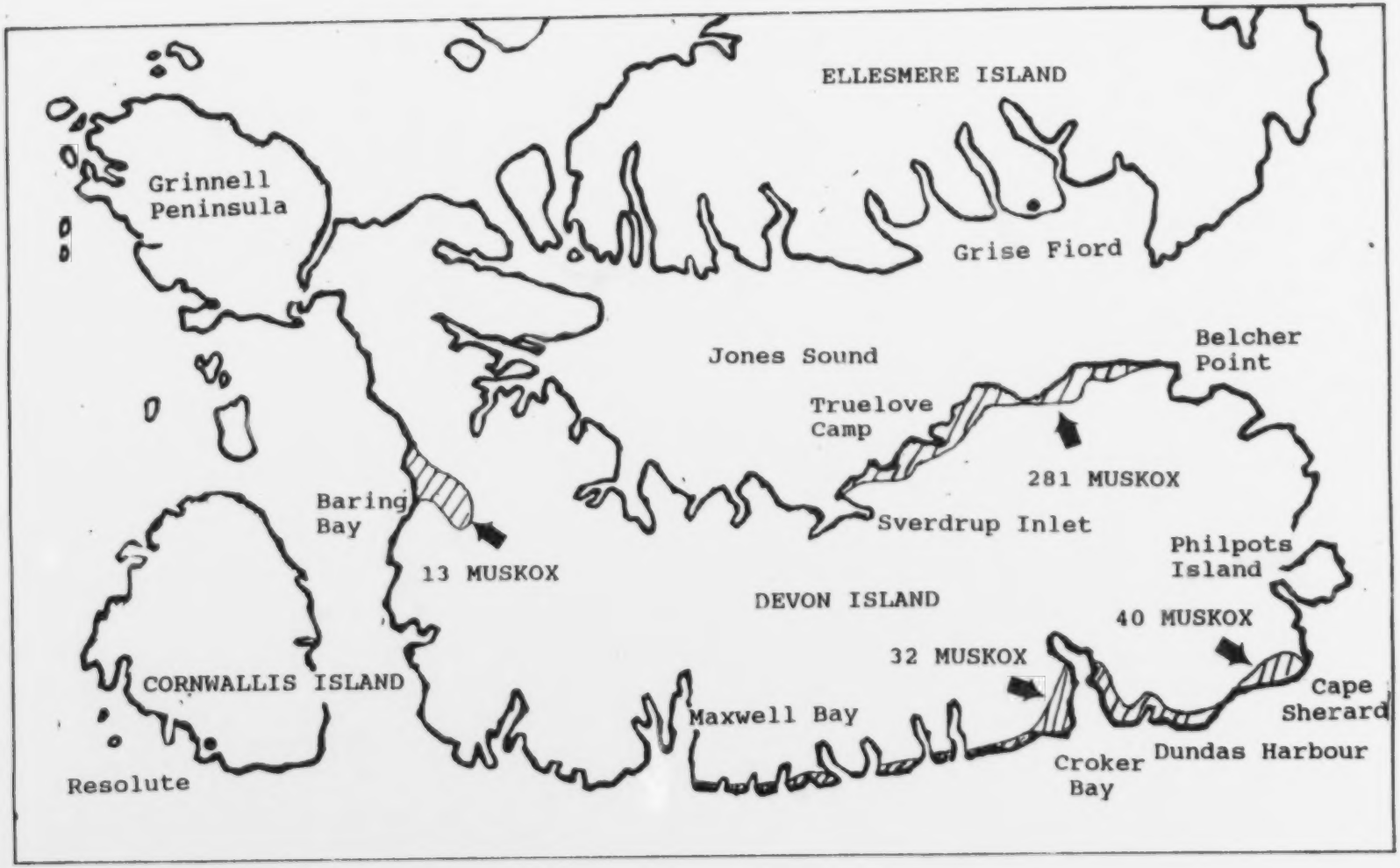

Figure 1. Area surveyed and number of muskoxen observed on Devon Island, 03-07 August 1990.

Table 1. Age, sex and location of muskox observed on Devon Island in August 1990.

LOWLAND	MALES	FEMALES	2 YEAR OLDS	YEARLINGS	CALVES
Sverdrup[a]	7	12	-	4	9
Sparbo-Hardy[a]	33	100	7	9	15
Skogn[a]	5	12	-	-	-
Truelove[a]	2	8	-	2	2
Newman-Smith[a]	11	26	3	7	8
Croker Bay/ Dundas Harbour	9	16	2	3	2
Cape Sherard	8	17	-	5	10
Baring Bay	4	8	-	-	1

[a] Contiguous lowlands along the northeast coast.

Calves made up 12.8% of the population while yearlings comprised 8.2%. Two year olds made up only 3.3% of the population, however, classification of two year olds from the air can be difficult so this number is likely an underestimate.

Muskox groups were generally small and scattered. The largest group was only 18 animals including calves. A total of 12 single animals were found all of which were adult males. The mean group size, including single animals, for the study area was 5.90 $\pm$ 4.67 S.D. Typical group size was 9.23 animals.

One muskox carcass was located on Sparbo-Hardy Lowland. According to observations by staff of the Arctic Institute of North America camp at Truelove Lowland the animal had died about two weeks prior to the survey. They also indicated the animal had a calf with it

when it died however the calf was not located. It appeared that the adult cow had died of starvation. The left femur was collected and the femur marrow fat was determined to be 3.14%. There was no subcutaneous or abdominal fat and the animal appeared to be emaciated.

DISCUSSION

Truelove and adjacent lowlands

Aerial surveys conducted by Pattie (1990) between 1984 and 1987 found between 71 and 188 muskox on these lowlands. The 280 animals located during this survey is the largest number ever located. Hubert (1977) observed 278 muskox on 16 August 1973. The distribution of muskox between the five lowlands was similar to Hubert's survey with the exception that numbers were lower on the Truelove Lowland in 1990.

The calf:cow ratio of 21.5 calves:100 females 2+ indicates good calf production in 1990, comparable to the central mainland Northwest Territories. Given that calf production was similar in 1989, the yearling:cow ratio of 13.9 yearlings:100 females 2+ suggests that calf survival was also comparable to that observed on the mainland (Gunn and Case 1984, Case and Graf 1986).

These results suggest that the population along the northeast coast has increased substantially since the mid 1980's and may have been

increasing in 1990. The apparent death of an adult female muskox by starvation in mid summer is a reminder, however, that starvation has played a large part in past population fluctuations.

Croker Bay/Dundas Harbour

A relatively brief search of the Croker Bay/Dundas Harbour area by Decker (unpubl) located 32 muskox in 1980. All of the animals were in the Dundas Harbour area. During this survey a lone bull was located on the west side of Croker Bay, 31 animals were around Dundas Harbour and 40 animals were located on the lowlands west of Cape Sherard. As no animals were found near Cape Sherard in 1980 it appears that muskox have moved into the area either from Philpots Island or Dundas Harbour.

Calf production was high near Cape Sherard with 58.8 calves:100 females 2+ while near Dundas Harbour calf production was low with only 12.5 calves:100 females 2+. The reason for this difference is not evident.

Baring Bay

Only 13 muskoxen were located on the lowland surrounding Baring Bay. This compares poorly with the 46 observed by Decker (unpubl) in 1980. A possible explanation is that the conditions which resulted in population declines on the north coast of Devon Island between 1983 and 1987 (Pattie 1990) and on the other arctic islands (Miller 1987) were especially severe along the west coast and the

muskox in that area have not been able to rebound as they have elsewhere on the island. Another plausible explanation is that the muskox were at higher elevations, inland from Baring Bay. This was not considered at the time of the survey as the inland areas are poorly vegetated. Subsequent analysis of flights made by Decker (unpubl) in 1980 indicated that he did find some herds inland along stream drainages and searches of these areas were warranted.

Harvesting

The total muskox quota for Devon Island (Muskox Management Area A/1-3) is 15 or 3.8% of the estimated 400 muskox on the island. The quota is divided between Grise Fiord (4 males only), Arctic Bay (4, 2 males 2 females) and Resolute (7, 4 males 3 females). Grise Fiord fills its quota annually. Arctic Bay fills its quota occasionally and Resolute has not used its quota as Muskox Management Area A/1-3 does not include the west coast of Devon Island and travel to either the north coast or the south east coast is very difficult.

RECOMMENDATIONS

1. There should be no increases to the muskox quotas on Devon Island. The current population can sustain the existing quotas even if there is a slight decline due to increased natural mortality.

2. A one day helicopter survey should be conducted of the Baring Bay area and surrounding drainages. Based on the results consideration should be given to including the west coast of Devon Island in Muskox Management Area A/1-3 and adjusting the Resolute quota to a level sustainable by the number of muskox found around Baring Bay.

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